Art. VI.—*Preliminary Communication on Fifty-three Tasmanian Crania, Forty-two of which are now recorded for the first time.*

By RICHARD J. A. BERRY, M.D., Edin. et Melb., F.R.S. Edin., F.R.C.S. Edin.,

AND

A. W. D. ROBERTSON, M.B., Ch.B., Melb.,

Government Research Scholar in the University of Melbourne.

[Read 11th March, 1909).

It does not, we feel sure, need any words of ours to emphasise, in a learned Society, the singular importance of the discovery indicated by the title of this paper; suffice it to say that in the whole annals of scientific Tasmanian literature there has never yet been recorded in a single communication such a large number of Tasmanian crania as we have the privilege to lay before the Royal Society of Victoria to-night.

When we reflect that the Tasmanian aboriginal carried with him into the nineteenth century, even into our own times, the primitive culture of palaeolithic man, and into his bodily organism many of the structural peculiarities of Homo Neanderthalensis, we shall perhaps commence to realise the scientific importance of the study of Tasmanian remains.

Of the far-reaching significance of the discovery in the twentieth century of the forty-two undescribed Tasmanian crania which it has been our privilege to find during the last few weeks, two lines of proof will suffice:—

First: The distinguished craniologist, Principal Sir William Turner,[1] in his "The Craniology, Racial Affinities, and Descent of the Aborigines of Tasmania," published so recently as October, 1908, commences his remarks by stating that "the opportunity of collecting additional (Tasmanian) specimens no longer exists."

Second: Turner, in the same memoir, has been at much pains to locate all the Tasmanian crania known to be in existence in the world's museums, and he states that "the crania catalogued in museums as Tasmanian, including those recorded in his own memoir, which have been studied and described by anthropologists, and the measurements of which have been more or less fully recorded, are seventy-nine in number."

These seventy-nine Tasmanian crania are located as follows:—

1.	Various Museums in London - - -	38
2.	Tasmanian Museum, Hobart - - -	12
3	University of Edinburgh, Anatomy Museum -	10
4.	Various Museums in Paris - - - -	9
5.	University of Oxford, Anatomy Museum -	6
6.	University of Cambridge - - - -	2
7.	Museum at Breslau - - - - -	1
8.	Museum at Philadelphia - - - -	1
	Total - -	79

From the two extracts from the memoir just quoted it should, we think, be sufficiently clear that a communication which now brings forward a totally new series of forty-two Tasmanian crania, that is, more than one-half of those previously known to be in existence, must be regarded as of paramount importance.

Passing next to the fifty-three Tasmanian crania with which this communication deals, eleven are common to this paper and to the seventy-nine quoted by Turner as known to be in existence, the remaining forty-two have hitherto been absolutely unknown to the world of science, and of these, eleven were obtained for the first time so recently as February last, and our acknowledgments for the privilege of doing so will be made in due course.

Dealing first with the eleven common to this paper and to Turner's paper, they comprise eleven of the twelve mentioned by him as being in the Tasmanian Museum, Hobart, and which have been described and measured by Harper and Clarke[2] in the "Papers and Proceedings of the Royal Society of Tasmania" for 1897, pages 97 to 110. The explanation of

the deficiency of one is due to the fact that when we were prosecuting our researches on these skulls in January and February, 1909, we discovered that one, number three of Harper and Clarke's memoir, was missing from the museum, and its whereabouts could not be ascertained. As a point of very particular interest, it may be mentioned that this series of eleven comprises the cranium of Truganini or Lalla Rhook, the last of her race.

Of the remaining forty-two, three are those which Harper and Clarke state in their memoir are the crania of half-castes, and three others are those which the same authors rejected *in toto* as not being Tasmanian. We differ from these authors on both points. We have no hesitation whatsoever in stating that all six crania are the crania of pure-blood Tasmanians, and we do so for the following reasons:—

1. These six crania are now, and always have been, catalogued by the Hobart Museum authorities as those of pure-bred Tasmanians. They have therefore always been differentiated from the crania of other races in the possession of the Museum, and there is ample evidence that Hobart Museum Curators, both past and present, have exercised due precautions in the verification of their material.

2. Harper and Clarke do not in their monograph give any sufficient reasons for rejecting these six crania. All they say is that "of this number we rejected at once three skulls as being incorrectly classed, and upon comparing the skulls after measurement, we decided to exclude three others, which in our opinion are those of half-castes. The measurements of these three crania are given in our table, but they are otherwise disregarded."

Attaching, as we did, considerable weight to the work of Harper and Clarke, we were at the outset of our investigations in Hobart prepared to accept their conclusions, but as our research progressed we were forced to the opinion that their data respecting these six crania were erroneous, and we decided to interview Mr. Clarke as to the precise reasons why he and his coadjutor had rejected these crania. Mr. Clarke very kindly came to the Museum and made another examination of the doubtful crania, with the ultimate result that his opinion

seemed to be decidedly weakened, and he stated that so far as he could remember the only reason for rejecting such crania was their rather large cubic capacity, the largest being not more than 1450 c.c.

To this we reply that, although unusual, such a large cubic capacity is not unknown amongst Tasmanian aborigi nals. Skull No. 7 in Turner's paper, which we have already quoted, has a capacity of 1430 c.c., whilst Klaatsch,[3] speaking of the Australian, says: "Owing to the great variation met with in the capacity of the brain cavity, as shown by all observers, e.g., Turner, Krause, it is not to be wondered at that there are some Australian skulls which are comparable with the average type of higher races, while there are others which even exceed the European average. This does not prove any closer relationship of the larger Australian skulls with those of other races, but demonstrates an independent specialisation taking rise from a common pithecanthropoid root, in conjunction with other races, at a stage when the brain capacity was relatively small."

3. Our third reason—the last and weightiest—for including these six crania as genuine Tasmanian pure bloods, is that every one presents over 90 per cent. of the features so characteristically found in the skull of the Tasmanian aboriginal, and this, we think, should finally set at rest any doubts as to their authenticity.

It will easily be understood that the long isolation of the Tasmanians, the prolonged inbreeding, and the total absence of any extraneous racial crossings, have caused certain morphological characteristics to be absolutely ingrained in the crania. Anyone who has handled Tasmanian crania in large numbers will have forced upon him the striking similarity of these crania, and in a very short space of time will be educated up to the recognition of a Tasmanian skull from amongst any others.

In a preliminary communication such as this we cannot enter into the question of these characteristics. They are fully set forth in almost all recent memoirs on the subject. It will suffice to point out some of the more striking peculiarities.

In *norma verticalis* there is the characteristic keeling along the line of the sutura sagittalis, the well-defined tuber parietale, the obovate outline, the dolichocephaly, the small size of the

post-orbital diameter as compared with the maximum orbital diameter, and which gives to all genuine Tasmanian crania such a striking resemblance to that of the Neanderthal fragment. All these signs were, with the exception of one sign in one skull, present in the doubtful crania.

In *norma lateralis* there is the uniformity in the recession of the forehead which we carefully tested for by the ingenious methods of Schwalbe, the arcus or torus supraorbitalis, the deep depression of the nasion—all of which were easily recognisable in the alleged spurious crania.

In *norma facialis* there is the platyrrhine nasal index, the high position of the nasion relative to the orbits, the rectangular orbital outline and the parabolic palate—all of which were present in the six crania with the exceptions of two features, one from each of two skulls.

Lastly, there were the highly characteristic cranial sutures, the ossa suturarum, and the epipteric bones, the last being present in two of the six—a high percentage—whilst the ossa suturarum were present in no less than three of the doubtful skulls.

In our opinion, therefore, there can no longer be any reasonable doubt that all six skulls rejected by Harper and Clarke are undoubtedly those of absolutely pure-bred Tasmanians, and we have therefore included them in our series, and we do so with every confidence.

We also discovered in the Hobart Museum fragments of three other Tasmanian skulls which are incorporated in our work. This brings the total of Tasmanian crania in the Tasmanian Museum, Hobart, up to twenty, nine of which are now presented to the scientific world for the first time. Had one of Harper and Clarke's original twelve not disappeared, there would, of course, be twenty-one.

Sixteen other Tasmanian skulls were discovered by us in Hobart. Of these, one was in the private possession of Inspector Cook, two were in the possession of Mr. A. J. Taylor, chief librarian of the Carnegie Library, Hobart, and thirteen were in the possession of Dr. E. L. Crowther, eleven of which were first obtained during our visit to Hobart. The whole of these sixteen crania are now dealt with for the first time. Mr.

Taylor was also good enough to present us with a cast of number two of Harper and Clarke's series, numbered 4291, in the Hobart Museum, and this has been deposited in the Anatomy Museum of the University of Melbourne.

Passing up into the interior of Tasmania, nine more, including two fragments, were discovered in the possession of Mr. E. O. Cotton, Kelvedon, and these also are new to scientists.

In the museum at Launceston we dealt with all five skulls in their collection, numbered 1201 to 1205, both inclusive. One more we discovered in the possession of Mr. Leslie Jolly of Launceston, and lastly, we succeeded in discovering two more in the possession of the Devonport Town Board. These eight skulls have not previously been known to scientists.

The extent of our new discovery of Tasmanian crania may therefore be summarised as follows:—

1.	Tasmanian Museum, Hobart - - -	9
2.	Dr. E. L. Crowther, Hobart - - - -	13
3.	Mr. A. J. Taylor, Hobart - - - -	2
4.	Inspector Cook, Hobart - - - -	1
5.	Mr. E. O. Cotton, Kelvedon - - -	9
6.	Launceston Museum - - - - -	5
7.	Mr. Leslie Jolly, Launceston - - -	1
8.	Devonport Town Board - - - - -	2
	Total - -	42

The details are set forth in Table 2.

Pending the settlement of the question as to where these relics of Palaeolithic Man's sojourn in Tasmania are to be ultimately housed, our problem was how to leave them, in the meantime, in the hands of their lawful owners and at the same time make them available for scientific study in all parts of the world.

This problem we have partially solved by taking accurate dioptrographic tracings of every skull in four normae, namely, norma verticalis, norma lateralis, norma facialis, and norma occipitalis, all of which are recorded, life size, by means of Professor Martin's ingenious instrument. We have therefore taken no less than 212 tracings of these Tasmanian crania,

168 of which comprise fresh material. If this work is to be attended with the ultimate results that its importance demands, it is imperative that these 212 drawings be published in their original form, and that as soon as possible.* This for four reasons:—

1. If the crania be left in private ownership, as the majority of them are at the present moment, they will inevitably, on the demise of their present proprietors, be either dispersed or lost, and there will be no traces of them left.

2. Publication in life size will render the material available to craniologists all the world over.

3. As craniological methods have been revolutionised during the last few years by the discoveries of Pithecanthropus, Neanderthal, Spy, Canstatt, Egisheim, etc., and also by the new investigational methods of Schwalbe, Klaatsch, the Sarasins and others, it is not improbable that another fifty years may elicit still more startling discoveries with the introduction of still more revolutionary craniological methods, in which case these Tasmanian crania may require fresh investigation, which cannot well be undertaken if the present-day material be not imperishably recorded.

It is not too much to say, in view of these possibilities and suggestions, that all known existing Tasmanian crania, whether in Europe, America or Australasia, ought to be similarly recorded, and thus made available for study in all parts of the world, and for all time.

4. A fourth and last reason for publication in life size is the fact that all measurements can be made upon the tracings.

Concerning the question of measurements, we measured all the crania that passed through our hands. Craniologists differ very markedly as to what measurements ought or ought not to be taken, with the consequent result that thousands of useless figures have been, at one time or another, recorded. Sir William Turner has very properly set his face against this useless recording of redundant figures, but in view of the fact that the British Association for the Advancement of Science,[4] and, further, a European International Commission,[5] have

* The Government of Victoria has generously undertaken the cost of publication of this work.

recently dealt with this question, and laid down the measurements which should be taken, we have adopted their suggestions and taken our measurements accordingly.

The tracings which we have recorded will suffice for almost all such measurements to be recorded upon them, and for all angular work upon the median sagittal sections, and therefore for almost all of the exquisite methods recently introduced by the distinguished Schwalbe. They will not, however, serve for the horizontal and coronal curves introduced by the Sarasins in their investigation on the Veddah,[6] and more recently adopted with so much success by Klaatsch in his investigation of the Australian aboriginal skull.[3] Such tracings require to be taken by a special instrument termed the diagraph. This instrument in its improved form was not on the market when the first order for anthropological instruments was despatched to Europe from the Anatomy Department of this University, and although it was subsequently ordered it was not to hand at the time of the investigation. We were, therefore, unable to take these curvilinear outlines.

One of the earliest purposes to which it is proposed to utilise the present material is the determination of the relationship of the Tasmanian to the anthropoids and primitive man on the one hand, and to the Australian aboriginal on the other hand. Schwalbe's fine study of the Pithecanthropus erectus[7] may serve as a basis for the former purpose, and Klaatsch's recent work[3] for the latter, though it must be remembered that innumerable authors have contributed to both subjects.

As regards the relationship of the Tasmanian to the Australian aboriginal, one of us has already made a communication to this Society.[9] Since the date of that paper, Klaatsch[3] has enunciated the view that both the Australian and Tasmanian aboriginal peoples have sprung from a common root, of which the Tasmanian is the type, and which has become very distinct through local isolation. He utterly scouts the idea of the Australian being a mixed race, though he admits an occasional intermixture with Papuan blood on the north-east coast of Australia, and also admits the possibility of the occurrence of two Australian types, as originally put forward by Topinard. Klaatsch explains the occurrence of two such types, not by a

racial admixture, but by local isolation on a vast continent due to defective communication. "In this way," says Klaatsch, "there has been time and room enough to effect local specialisations in the primitive unitary type which must be accepted as the common root from whence sprung all the Australian and Tasmanian people."

This view is, of course, in direct opposition to Ling Roth,[10] who supported the opinion that the curly-haired Tasmanian was the primitive inhabitant of Australia, and was subsequently displaced by the much straighter-haired Australian Aboriginal.

To those members of this Society who heard Berry's[9] paper of 1907, it is not without interest to note that Turner,[1] the latest contributor to this subject, concludes his statement with the following words:—

"The evidence seems to be in favour of the descent of the Tasmanians from a primitive Negrito stock, which migrated across Australia, rather than by the route of the Melanesian Oceanic islands lying to the north and east of the Australian continent."

This preliminary communication, brief though it be, must conclude with a lengthy expression of thanks. It need hardly be said that such a large collection of undescribed material could not possibly have been obtained without much kind assistance. We desire, therefore, to express our most grateful thanks to Dr. J. S. C. Elkington, the permanent head of the Tasmanian Public Health Department, who prepared the way for us, and who at all times rendered us the most courteous assistance; to the Trustees of the Hobart Museum for the use of their invaluable material; to Mr. Hall, the Curator of the Museum; to the President and Council of the Royal Society of Tasmania for the use of their rooms and library; to the Trustees of the Launceston Museum and its Curator, Mr. Scott; to the Devonport Town Board and Mr. B. C. Green, the Secretary, for so kindly forwarding their material for use in Launceston; to all the private owners of crania whose names have already been mentioned; to Drs. E. L. Crowther and A. H. Clarke for much kind assistance; and lastly to Messrs. W. L. Crowther and W. J. Clark, who did all in their power to make our visit to Tasmania a successful one. A word is also due to Mr. Arnold,

the caretaker of the Hobart Museum, for his uniform kindness and courtesy.

We can only conclude with the hope that this unexpected discovery of material, said by the European savants to be now beyond all hope of redemption, may stimulate us to further efforts in the same field.

TABLE I.

NUMBER, LOCATION AND SEX OF EXTANT TASMANIAN CRANIA, DESCRIBED PRIOR TO THE BERRY AND ROBERTSON DISCOVERY.

	Male.	Female.	Youthful.	Sex not Stated.	Total
1. Royal College of Surgeons. England. Owen, Flower	9	7	3	1	20
2. Royal College of Surgeons, England. Barnard Davis Collection	9	6			15
3. British Museum of Natural History, South Kensington, London	1				1
4. Museum of Army Medical Department, Millbank, London	1		1		2
5. Museums in Paris. Topinard, De Quatrefages and Hamy	5	3	1		9
6. Breslau (fragment only)	1				1
7. University of Oxford. Anatomy Museum. Turner	2	4			6
8. Tasmanian Museum, Hobart. Harper and Clarke	6	6			12
9. University of Cambridge (fragments). Duckworth	2				2
10. Philadelphia				1	1
11. University of Edinburgh. Anatomy Museum. Turner	8	1	1		10
	44	27	6	2	79
Subtract one lost from Hobart					1
					78

TABLE II.

NUMBER, LOCATION AND SEX OF THE 42 TASMANIAN CRANIA DISCOVERED BY BERRY AND ROBERTSON.

	Male.	Female.	Youthful.	Sex not Stated.	Total.
Tasmanian Museum, Hobart. Complete skulls. Nos. 4320 M., 4297 M., 4290 F., 4295 F., 4296 M., 4303 F., 1572 F. - - - - -	3	4			7
Tasmanian Museum, Hobart. Fragments. Fronto-occipital fragment, F. Frontal fragment, M. - - - - - - - -	1	1			2
Museum, Launceston. Nos, 1201 M., 1202 F., 1203 M., 1204 M., 1205 M. - - - - -	4	1			5
Devonport. Nos. 1 M., 2 F. - - - - -	1	1			2
Mr. Leslie Jolly. Launceston - - - - -	1				1
Inspector Cook. Hobart - - - - - -	1				1
Mr. A. J. Taylor. Specimen with face attached M. Specimen with face detached F. - -	1	1			2
Dr. E. L. Crowther. Hobart - - - - -	8	3	1	1	13
Mr. E. O. Cotton. Kelvedon - - - - -	7			2	9
Totals of Berry and Robertson Collection	27	11	1	3	42
Carried forward from Table I. - -	43*	27	6	2	78*
Totals of Tasmanian Crania - - -	70	38	7	5	120

*After subtraction of missing skull from Tasmania.

LIST OF WORKS REFERRED TO IN THE TEXT.

1. Turner, Sir William.—"The craniology, racial affinities, and descent of the Aborigines of Tasmania." Trans. Royal Soc. Edin., vol. xlvi., part ii., No. 17, 1908, pp. 365-403.
2. Harper and Clarke.—"Notes on the measurements of the Tasmanian Crania in the Tasmanian Museum, Hobart."

Papers and Proceedings of the Royal Soc. of Tasmania, 1897, pp. 97-110.

3. Klaatsch, H.—"The skull of the Australian Aboriginal." Reports from the Path. Lab. of the Lunacy Department, N. S.W. Government, vol. i., part iii., 1908, pp. 43-167.
4. British Association for the Advancement of Science. 1905.
5. International Agreement for the unification of Craniometric and Cephalometric Measurements. Monaco, 1906.
6. Sarasin, P. and F.—"Ergebnisse naturwissenschaftlicher Forschungen auf Ceylon in den Jahren 1884 bis 1886." Band iii. Die Wedda, Wiesbaden, 1892-93.
7. Schwalbe, G.—"Studien über Pithecanthropus erectus Dubois." Zeitschrift für Morph. und Anthropologie. Band i., heft i., 1899, pp. 16-240.
8. Schwalbe, G.—"Ueber die specifischen Merkmale des Neanderthalschädels." Verhand der Anat. Gesell.; Erganzungsheft zum xix. Band Anat. Anz., 1901, pp. 44-61.
9. Berry, R. J. A.—"A living descendant of an extinct (Tasmanian) Race." Proc. Royal Soc. Victoria, vol. xx. (new series), 1907, pp. 1-20.
10. Roth, H. Ling,—"The Aborigines of Tasmania." 2nd edition. Halifax, 1899.